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Design and Build an Inverter-Grade Magnet Wire Tester

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Senior Design Project

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A final report submitted to

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TABLE OF CONTENTS

TABLE OF FIGURES

ABSTRACT

Phelps Dodge Magnet Wire Company is required to have a test to quantify the performance of magnet wire products in an inverter motor that is controlled by a variable frequency drive. Phelps Dodge's customers are requiring inverter motor test data that proves the performance of Quantum Shield is equal to or better than other inverter-grade magnet wire products. This report contains the electrical design to control and monitor an inverter motor test that quantifies the electrical performance of magnet wire products in an inverter motor application. The inverter motor test consists of five magnet wire samples that are electrically stressed across two phases of an induction motor that is controlled by a variable frequency drive. When a sample fails, the elapsed time that the sample was energized is recorded to determine the electrical performance of the magnet wire sample.